Surgery Illustrated – Focus on Details
A modification of the embedding of tapered ileum in a continence mechanism as described previously: a self-critical analysis

Friedrich-Carl von Rundstedt, Ulrich Gertenbach and Stephan Roth
Department of Urology and Paediatric Urology, Helios Klinikum Wuppertal, University Witten-Herdecke, Wuppertal, Germany

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INTRODUCTION

The creation of a continent and reliably stable catheterizable valve is the most critical aspect in the construction of a continent cutaneous ileal reservoir and several techniques have been proposed. One of our techniques has been the application of a continence mechanism using serous-lined extramural valves as described previously by Abol-Enein and Ghoneim [1] for patients who were considered ineligible for orthotopic diversion. We have previously described a modification of this continence mechanism as a 'trouble-shooting' technique for primary and secondary urinary diversion [2]. Due to an unacceptable failure rate of 27% (four of 15 patients), we reconsidered the modification (Fig. 1) and returned to the original technique. In the original technique, four windows were created in the mesentery of the tapered segment. This was necessary to adapt the tapered segment to the adjacent limbs of the ileal 'U' without compromising blood supply to the tapered segment itself. Our modification consisted of simplifying the embedding (Fig. 1) by creating a sero-serosal tunnel where the entire tapered ileal segment with its mesenterial attachment was laid in without the previous formation of mesenteric windows. We considered the dissection of the mesentery as time consuming and critical due to the increased potential of damaging mesenterial arteries and impairing blood supply to the tapered segment.

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METHODS/DESCRIPTION

Figure 1

We generally isolated ≈40 cm of small bowel for the creation of the continence mechanism. The distal 10 cm of the segment were separated from the oral segment and tapered around an 18 F catheter. The oral segment was opened in an anti-mesenterial manner and brought into a U-shaped configuration. In our modification of the original technique, which we later abandoned, the two limbs were then adapted by a 3/0 non-absorbable monofilament suture and the tapered oral segment was embedded onto the sero-serosal plate with all its mesenterial attachments (a). The sero-serosal tunnel was finally closed with a running 3/0 absorbable polyglactin suture (b).

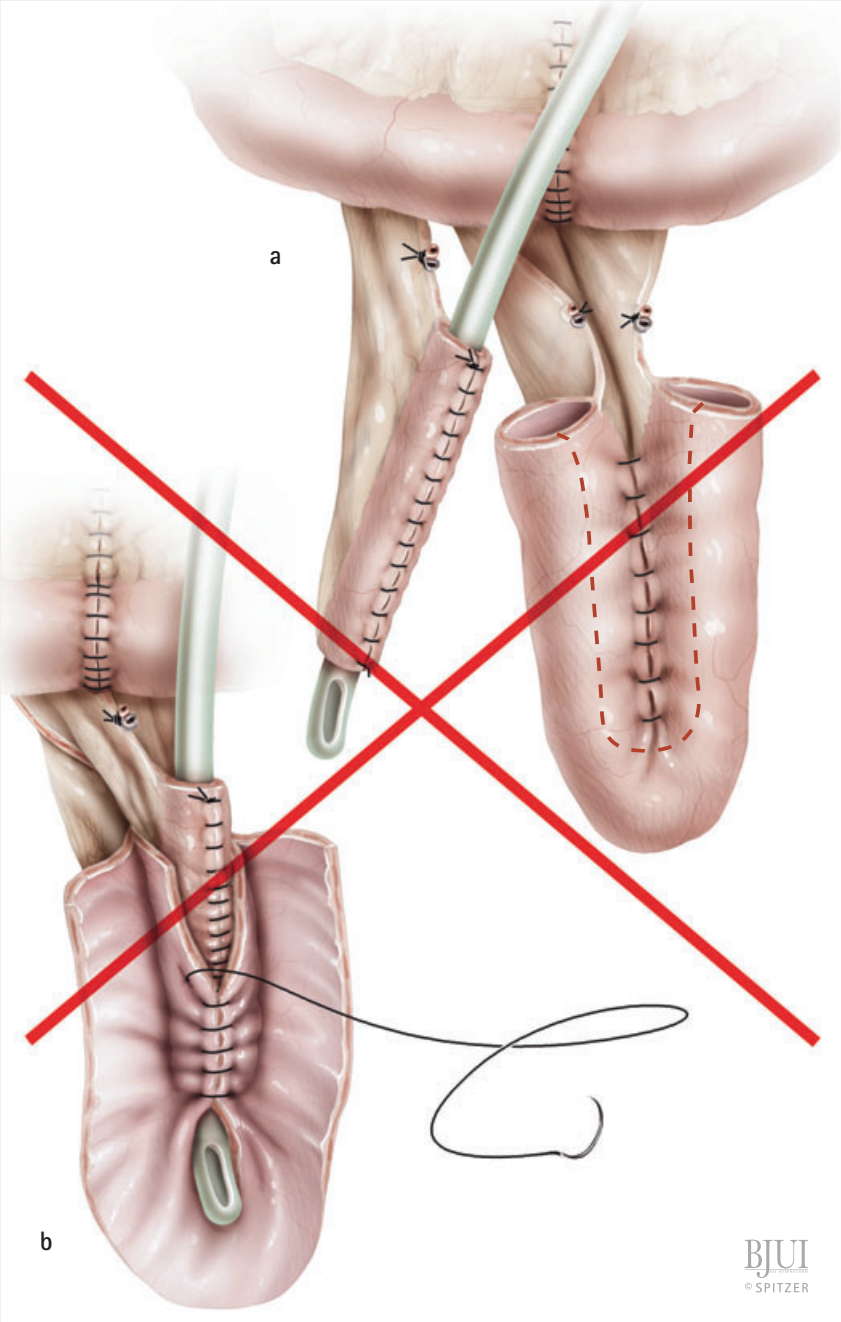

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Figure 2

In the original technique, to which we returned again to due to the increased failure rate of our simplified modification mentioned above, the mesentery of the tapered ileal segment is incised creating four mesenteric windows.

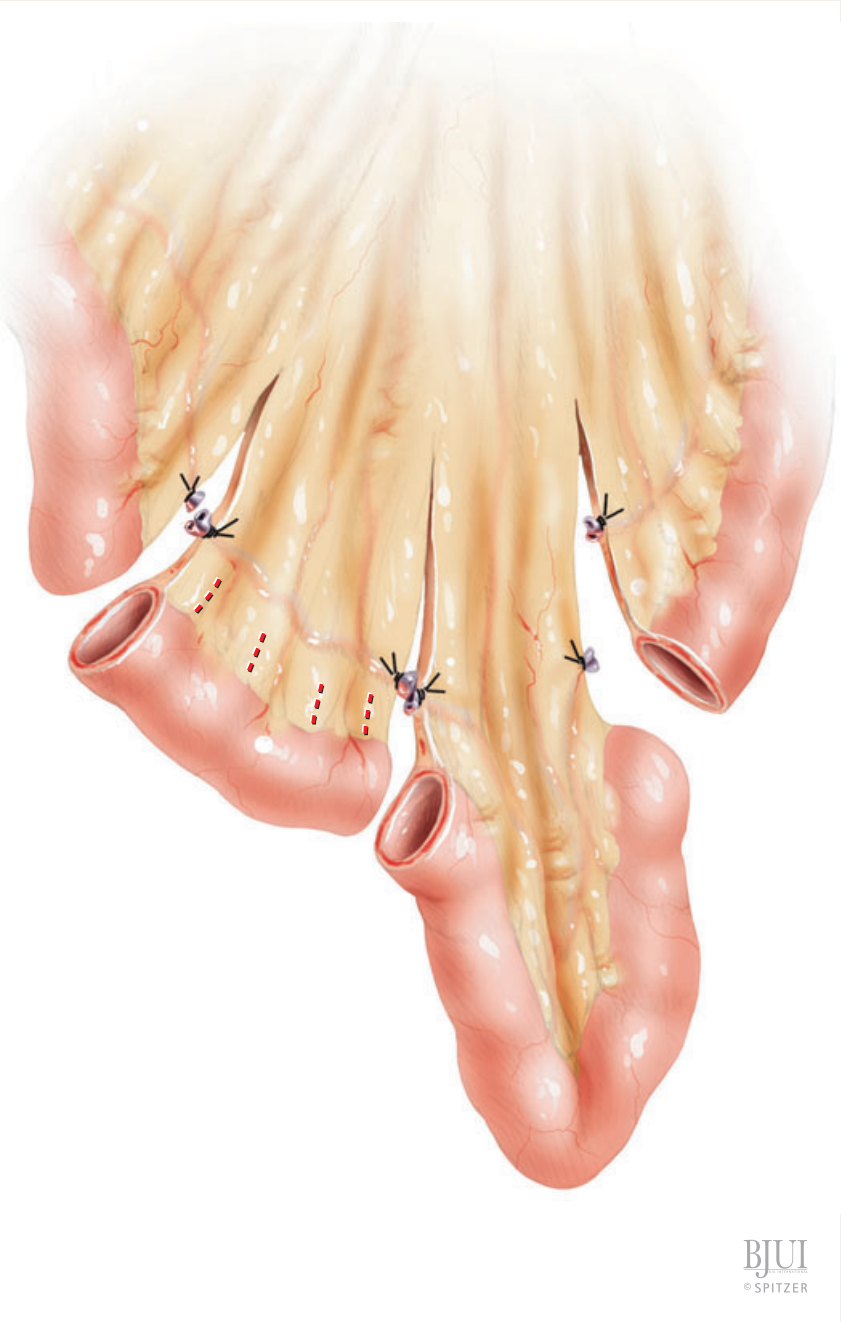

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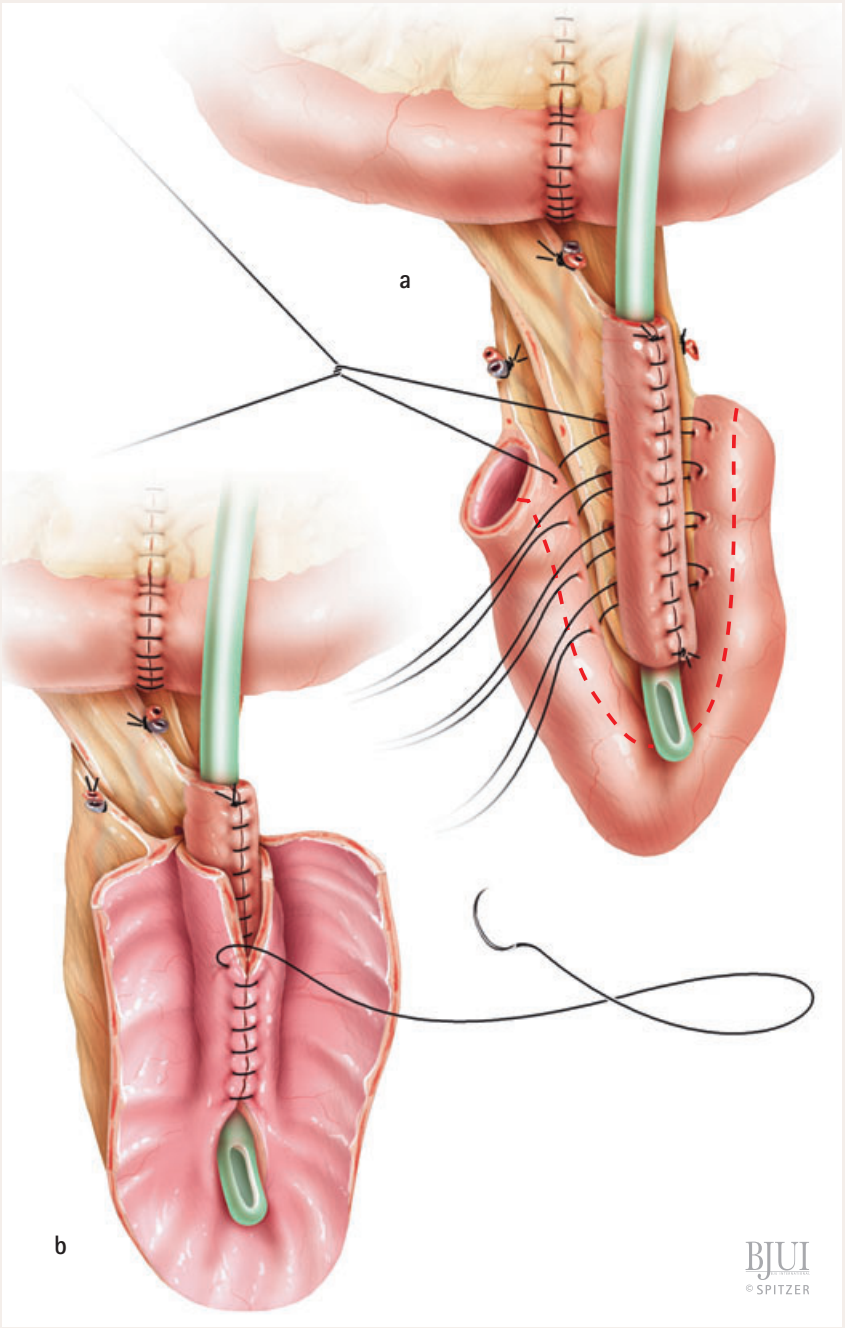
Figure 3

Both limbs of the ileal 'U' are then approximated by sero-muscular sutures (3/0 non-absorbable monofilament), which pass through these four windows (a). The tapered segment is therefore placed between the limbs rather than on top of a sero-serosal bed. The mesentery of the tapered segment is not drawn into the tunnel but rather placed between the mesenterial supply of the two limbs of the ileal 'U'. The sero-serosal tunnel is then finally closed with a running suture (b).



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SUMMARY

We applied a modified technique in the creation of a continent cutaneous ileal pouch in a first series of 15 patients (Fig. 1). Due to the high failure rate of 27% (four of 15), we abandoned our modification and returned to the original technique, applying it to the last five patients on whom we operated. Four of the first 15 patients developed incontinence, i.e. an insufficient functioning of the continence mechanism. Three patients were entirely incontinent, while one patient presented with a partial incontinence that required surgical correction. In the first three patients, the surgery revealed a dehiscence of the serous-lined tubular ileal segment. This was most probably caused by axial tension on the segment in the filling stage and due to pressure on the sutures by either oedematous reaction of the tapered segment or the fat mesentery, which led to an insufficient compression of the tubular segment. In two of these patients, a fistula developed that led from the tubular segment to the pouch.

In the second series (patients 16–20) we returned to the original technique to reduce axial tension on the tapered segment and the closure sutures, and therefore maintaining the necessary compression of the tubular segment. To date, none of these five patients have had any complications with the functioning of the continence mechanism. Therefore, it appears to be essential to create mesenteric windows below the tapered segment and to place the tapered segment between the limbs of the ileal 'U' rather than on top of it. The sero-serous sutures combining the limbs should be pulled through these windows. They form the dorsal support that functions as an abutment when axial tension is applied on the tubular segment as the reservoir fills. Additionally, the tunnelling of the ileal segment without the inlay of the mesentery reduces tension on the sutures. The original technique allows a tension-reduced creation of the continence mechanism, while leaving the blood supply to all intestinal segments uncompromised.

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Correspondence: Friedrich-Carl von Rundstedt, Department of Urology and Paediatric Urology, Helios Klinikum Wuppertal, University Witten-Herdecke, Wuppertal, Germany.
e-mail: fvonrundstedt@googlemail.com

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